

CLAIMS

I claim:

1. A method of signing a supplemental television content application comprising
5 files, the method comprising:

identifying at least a first portion of the files in at least one cluster;
determining a cluster signature for each cluster; and
developing an expression that includes the location of the signature.

- 10 2. The method of claim 1 wherein said signature for each cluster is based on a hash code of the files composing the cluster.

3. The method of claim 1 wherein the application comprises a start file and further comprising storing the expression in the start file.

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4. The method of claim 1 wherein the application comprises a start file and further comprising storing a link to the expression in the start file.

5. The method of claim 1 further comprising storing at least one of delegate
20 information, security policy information, time version information, and file identification information for each cluster in the expression.

6. The method of claim 1 further comprising storing the cluster signature in a signature file, developing a reference to the files composing the cluster, and storing the reference to the files in the signature file.
- 5 7. The method of claim 1 further comprising storing the cluster signature in a signature file, developing a time version record for the cluster, and storing the time version record in the signature file.
8. The method of claim 1 further comprising developing at least one of a
10 reference to the files composing the cluster, and a time version record for the cluster.
9. The method of claim 1 wherein a second portion of the files comprises a web page and further comprising determining a signature for each web page.
- 15 10. The method of claim 9 wherein the web pages is at least one of a markup language based application and dynamically created by a client.
11. The method of clam 9 further comprising at least one of:
20 developing a link to the signature and storing the link in the web page; and storing the signature in the web page.
12. A method of signing a supplemental television content application comprising files, the method comprising:

identifying a first portion of the files that together compose a web page;
determining a signature for the web page; and
storing one of a link to the signature in the web page, or the signature in the
web page.

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13. The method of claim 12 further comprising developing an expression that
includes signature information, and storing the expression in the web page.

14. The method of claim 13 wherein the expression comprises at least one of
10 security policy information data, and delegate data.

15. The method of claim 12 further comprising:
clustering at least a second portion of the files in at least one cluster;
determining a cluster signature for each cluster; and
15 developing an expression that includes indicating the location of the
clusters.

16. A method of executing a supplemental television content application that
comprises files, the method comprising:
20 determining if any of the files are arranged in a cluster;
for each cluster,
determining the location of the signature of the cluster;
determining the files that compose the cluster; and

verifying the integrity of the files in the cluster by operations including verifying the signature.

17. The method of claim 16 wherein the determining if any of the files are
5 arranged in clusters operation further comprises:
determining if an application start file has a record that includes one of
a reference to an expression having the location of the signature, and
the expression;
reading from the expression the location of a file having a signature of a
10 cluster for each cluster; and
and determining if the signatures can be verified.

18. The method of claim 17 wherein each of the files composing a cluster is
stored in one of
15 the expression, and
a file storing a signature.

19. The method of claim 17 wherein each signature is based on a hash of each file
composing the cluster.

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20. The method of claim 17 wherein the reading operation further comprises
reading whether there are any delegates for any of the clusters, and determining if
a signature is valid based on the delegates.

21. The method of claim 17 further comprising reading time version information associated with a cluster and determining if the signature may be valid based on the time version information.
- 5 22. The method of claim 16 further comprising determining if any of the files is a web page file having one of a link to a signature and a signature; reading the signature, and verifying the signature.
23. A method of executing a supplemental television content application
- 10 comprising files, the method comprising:
- determining if any files compose web pages; and
- if any of the files compose web pages, then
- for each of the web pages, decoding the web page to determine if the web page has one of a link to a digital signature and a digital signature,
- 15 reading the signature, and
- verifying the signature.
24. The method of claim 23 further comprising:
- determining if any of the files are arranged in a cluster;
- 20 for each cluster, determining the files that compose the cluster and the location of the signature of the cluster;
- verifying the integrity of the files in the cluster by operations including verifying the signature.

25. A supplemental television content architecture comprising:

application files;

at least one of :

5 (a) an at least one signature file having a signature of at least
a portion of said application files detached from said application files; and a start
file having one of an expression having a link to each signature file, and a link to
an expression having a link to each signature file; and

(b) an at least one web page comprising at least a portion of
said application files and each web page coded with one of an signature and a link
10 to the signature.

26. The architecture of claim 25 wherein the expression further has cluster
information.

15 27. The architecture of claim 25 wherein the expression further has at least one of
delegate information and security policy information.

28. The architecture of claim 25 wherein the signature file further has at least one
of a reference to cluster files and time version information.

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29. The architecture of claim 25 wherein the web page further comprises a
metadata expression.

30. The architecture of claim 29 wherein the metadata expression comprises at least one of security policy information and signature delegate information.

31. One or more computer readable media having stored thereon a plurality of instructions that, when executed by at least one processor, causes the processor to perform acts comprising:

identifying at least a first portion of supplemental television content application files in at least one cluster;

determining a cluster signature for each cluster; and

developing an expression that includes the location of the signature.

32. The computer readable media of claim 31 wherein the signature for each cluster is based on a hash code of the files composing the cluster.

33. The computer readable media of claim 31 wherein the application comprises a start file and said acts further comprise storing the expression in the start file.

34. The computer readable media of claim 31 wherein the application comprises a start file and said acts further comprise storing a link to the expression in the start file.

35. The computer readable media of claim 31 wherein the expression further includes at least one of delegate information, security policy information, time version information, and file identification information for each cluster.

36. The computer readable media of claim 31 wherein said acts further comprises storing the cluster signature in a signature file, developing a reference to the files composing the cluster, and storing the reference to the files in the signature file.

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37. The computer readable media of claim 31 wherein said acts further comprise storing the cluster signature in a signature file, developing a time version record for the cluster, and storing the time version record in the signature file.

10 38. The computer readable media of claim 31 wherein said acts further comprise developing at least one of a reference to the files composing the cluster, and a time version record for the cluster.

15 39. The computer readable media of claim 31 wherein a second portion of the files comprises a web page and further comprising determining a signature for each web page.

40. The computer readable media of claim 39 wherein the web pages is at least one of a markup language based application and dynamically created by a client.
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41. The computer readable media of claim 39 wherein said acts further comprise at least one of:

developing a link to the signature and storing the link in the web page; and
storing the signature in the web page.

42. One or more computer readable media having stored thereon a plurality of instructions that, when executed by at least one processor, causes the processor to perform acts comprising:

- 5 identifying a first portion of supplemental television content application file that together compose a web page;
- determining a signature for the web page; and
- storing one of a link to the signature in the web page, or the signature in the web page.

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43. The computer readable media of claim 42 wherein said acts further comprise developing an expression that includes signature information, and storing the expression in the web page.

- 15 44. The computer readable media of claim 43 wherein the expression comprises at least one of security policy information data, and delegate data.

45. The computer readable media of claim 42 wherein said acts further comprise:

- clustering at least a second portion of the files in at least one cluster;
- 20 determining a cluster signature for each cluster; and
- developing an expression that includes indicating the location of the clusters.

46. One or more computer readable media having stored thereon a plurality of instructions that, when executed by at least one processor, causes the processor to perform acts comprising:

- 5 determining if any supplemental television content application files are arranged in a cluster;
- for each cluster,
- determining the location of the signature of the cluster files that compose the cluster;
- determining the files that compose the cluster; and;
- 10 10 verifying the integrity of the files in the cluster by operations including verifying the signature.

47. The computer readable media of claim 46 wherein the act of determining if any of the files are arranged in clusters further comprises:

- 15 determining if an application start file has a record that includes one of
 - a reference to an expression having the location of the signature, and
 - the expression;
- reading from the expression the location of a file having a signature of a cluster for each cluster; and
- 20 20 and determining if the signatures can be verified.

48. The computer readable media of claim 47 wherein each of the files composing a cluster is stored in one of

- the expression, and

a file storing a signature.

49. The computer readable media of claim 47 wherein each signature is based on a hash of each file composing the cluster.

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50. The computer readable media of claim 47 wherein the act of reading further comprises reading whether there are any delegates for any of the clusters, and determining if a signature is valid based on the delegates.

10 51. The computer readable media of claim 47 further comprising reading time version information associated with a cluster and determining if the signature may be valid based on the time version information.

15 52. The computer readable media of claim 46 wherein said acts further comprise determining if any of the files is a web page file having one of a link to a signature and a signature; reading the signature, and verifying the signature.

20 53. One or more computer readable media having stored thereon a plurality of instructions that, when executed by at least one processor, causes the processor to perform acts comprising:

determining if any supplemental television content application files
compose web pages; and

if any of the files compose web pages, then

for each of the web pages, decoding the web page file to determine if the web page has one of a link to a digital signature and a digital signature, reading the signature, and verifying the signature.

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54. The computer readable media of claim 57, the acts further comprising:

determining if any of the files are arranged in a cluster;

for each cluster, determining the files that compose the cluster and the location of the signature of the cluster;

10 verifying the integrity of the files in the cluster by operations including verifying the signature.